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Basic information		
INI - Own-initiative procedure	2018/2088(INI)	Procedure completed
Comprehensive European industrial policy on artificial intelligence and robotics		
Subject		
3.30.06 Information and communication technologies, digital technologies		
3.40 Industrial policy		
3.40.06 Electronics, electrotechnical industries, ICT, robotics		

Key players			
European Parliament	Committee responsible	Rapporteur	Appointed
	 ITRE Industry, Research and Energy		23/10/2018
		 FOX Ashley	
		Shadow rapporteur	
		 SAUDARGAS Algirdas	
		 KAILI Eva	
		 NAGTEGAAL Caroline	
		 BÜTIKOFER Reinhard	
		 TAMBURRANO Dario	
		 KAPPEL Barbara	
	Committee for opinion	Rapporteur for opinion	Appointed
	 ENVI Environment, Public Health and Food Safety		02/05/2018
		 PIECHA Bolesław G.	
 EMPL Employment and Social Affairs	The committee decided not to give an opinion.		
 REGI Regional Development	The committee decided not to give an opinion.		
 LIBE Civil Liberties, Justice and Home Affairs (Associated committee)		20/06/2018	
	 BONI Michał		
 IMCO Internal Market and Consumer Protection (Associated committee)		16/05/2018	
	 CHARANZOVÁ Dita		
 JURI Legal Affairs (Associated committee)		15/05/2018	
	 DELVAUX Mady		

Key events

14/06/2018	Committee referral announced in Parliament		
14/06/2018	Referral to associated committees announced in Parliament		
14/01/2019	Vote in committee		
30/01/2019	Committee report tabled for plenary	A8-0019/2019	
11/02/2019	Debate in Parliament		
12/02/2019	Results of vote in Parliament		
12/02/2019	Decision by Parliament	T8-0081/2019	Summary
12/02/2019	End of procedure in Parliament		

Technical information

Procedure reference	2018/2088(INI)
Procedure type	INI - Own-initiative procedure
Procedure subtype	Initiative
Legal basis	Rules of Procedure EP 54
Other legal basis	Rules of Procedure EP 159
Stage reached in procedure	Procedure completed
Committee dossier	ITRE/8/13327

Documentation gateway

Committee draft report		PE630.525	14/11/2018	EP	
Committee opinion	ENVI	PE623.609	21/11/2018	EP	
Committee opinion	IMCO	PE631.809	07/12/2018	EP	
Amendments tabled in committee		PE631.926	10/12/2018	EP	
Specific opinion	JURI	PE631.777	12/12/2018	EP	
Committee opinion	LIBE	PE629.403	13/12/2018	EP	
Amendments tabled in committee		PE632.896	30/01/2019	EP	
Committee report tabled for plenary, single reading		A8-0019/2019	30/01/2019	EP	
Text adopted by Parliament, single reading		T8-0081/2019	12/02/2019	EP	Summary
Commission response to text adopted in plenary		SP(2019)327	17/07/2019	EC	

The Committee on Industry, Research and Energy adopted an own-initiative report by Ashley FOX (ECR, UK) on a comprehensive European industrial policy on artificial intelligence (AI) and robotics.

AI is evolving rapidly and has been a part of everyday life for many years. AI and robotics drive innovation, leading to new business models and playing a key role in transforming societies and digitising economies in many sectors, such as industry, health care, construction and transport.

In light of this phenomenon, the report made a series of recommendations.

A society supported by artificial intelligence and robotics

Automation combined with artificial intelligence will increase productivity and thus increase output. Some jobs will be replaced but new jobs will also be created. In this context, Members recommended that Member States, alongside private sector actors, identify the risks and develop strategies to ensure that relevant retraining and reskilling programmes are developed for workers in the industries most affected by the automation of tasks. Education curricula must also be adapted.

Expressing concern about the possible misuse of artificial intelligence at the expense of fundamental rights, the report advocated that AI research also focus on the detection of accidentally or maliciously corrupted AI and robotics.

The technological path towards artificial intelligence and robotics

The report welcomed the Commission's proposal for the Digital Europe Program and the budget of EUR 2.5 billion pledged to Artificial Intelligence, as well as the increase in funding under the Horizon 2020 programme.

It emphasised that AI research must invest not only in technology and innovation, but also AI-related social, ethical and liability areas, and any AI model deployed should have ethics by design.

Members recommended greater investment in this field in order to remain competitive and facilitate access to credible information addressing the main concerns about AI and robotics such as privacy, safety and transparency in decision-making. They also underlined that a rapid, safe and secure development of 5G is essential to guarantee that the Union can reap the full benefits of AI and protect against cyber security threats.

Industrial policy

Members recommended the use and promotion of public-private partnerships to explore solutions to key challenges while emphasising the need to standardize the design and use of AI systems.

The report stressed the importance of concentrating public support for AI on the strategic sectors in which European industry has the greatest opportunities to play a leading role at a global level and which have added value in the general public interest such as public sector, health, energy, transport, agriculture and the food chain, cybersecurity and SMEs.

Legal framework

In order to promote a regulatory environment conducive to the development of AI, Members asked the Commission to regularly re-evaluate existing legislation in order to ensure that it is fit for purpose with respect to AI while also respecting EU fundamental values

The report underlined the importance of the principle of mutual recognition in the cross-border use of smart goods, including robots and robotic systems and the need to integrate the security and privacy by design principles in their policies related to robotics and artificial intelligence. Any forthcoming Union regulatory framework on AI should respect the confidentiality of communications and the protection of personal data.

Members called for the creation of an ethical charter of best practice for AI and robotics that companies and experts should follow, stressing that ethical rules must be in place to ensure human-centric AI development, the accountability and transparency of algorithmic decision-making systems, clear liability rules and fairness.

Governance

Members called on the Commission and the Member States to consider the creation of a European regulatory agency for AI and algorithmic decision-making tasked with:

- establishing a risk assessment matrix for classifying algorithm types and application domains according to their potential for a significant negative impact on citizens;
- investigating the use of algorithmic systems where a case of infringement of human rights is suspected (with evidence provided by a whistle-blower, for example);
- advising other regulatory agencies about algorithmic systems falling within their remit;
- enhancing the effectiveness of the tort liability mechanism;
- auditing the AIAs of high-level impact systems to approve or reject the proposed uses of algorithmic decision-making in highly sensitive and/or safety-critical application domains (private health-care, for instance);
- investigating suspected cases of rights violations by algorithmic decision-making systems.

Comprehensive European industrial policy on artificial intelligence and robotics

The European Parliament adopted by 572 votes to 54 with 45 abstentions a resolution on a comprehensive European industrial policy on artificial intelligence (AI) and robotics.

Members pointed out that AI and robotics drive innovation, leading to new business models and playing a key role in transforming societies and digitising economies in many sectors, such as industry, health care, construction and transport. Parliament stated at the same time, that AI and robotics should be developed and deployed in a human-centred approach with the aim of supporting humans at work and at home.

It made a series of recommendations.

Labour in the era of artificial intelligence and robotics

Automation combined with artificial intelligence will increase productivity and thus increase output. Some jobs will be replaced but new jobs will also be created. As citizens of all ages will be impacted, Members stressed that education curricula must be adapted, including through the establishment of new learning paths and the use of new delivery technologies. In particular the need for digital skills, including coding, should be included in teaching and training from the early school years to life-long learning.

Members recommended that Member States, alongside private sector actors, identify the risks and develop strategies to ensure that relevant retraining and reskilling programmes are developed for workers in the industries most affected by the automation of tasks.

Malicious use of artificial intelligence

Parliament highlighted the fact that malicious or negligent use of AI could threaten digital security and physical and public safety, as it could be used to attacks on information society services and connected machinery,. It called on the Commission to:

- propose a framework that penalises perception manipulation practices when personalised content or news feeds lead to negative feelings and distortion of the perception of reality that might lead to negative consequences (for example, election outcomes, or distorted perceptions on social matters such as migration);
- take note of the social challenges arising from practices resulting from the ranking of citizens, who should not be subjected to discrimination on the basis of their ranking.

The technological path towards artificial intelligence and robotics

Parliament welcomed the Commission's proposal for the Digital Europe Programme and the budget of EUR 2.5 billion pledged to Artificial Intelligence, as well as the increase in funding under the Horizon 2020 programme. It emphasised that AI research must invest not only in technology and innovation, but also AI-related social, ethical and liability areas, and any AI model deployed should have ethics by design.

Members recommended greater investment in this field in order to remain competitive and facilitate access to credible information addressing the main concerns about AI and robotics such as privacy, safety and transparency in decision-making. They also underlined that a rapid, safe and secure development of 5G is essential to guarantee that the Union can reap the full benefits of AI and protect against cyber security threats.

Industrial policy

Members recommended the use and promotion of public-private partnerships to explore solutions to key challenges while emphasising the need to standardize the design and use of AI systems.

Parliament stressed the importance of concentrating public support for AI on the strategic sectors in which European industry has the greatest opportunities to play a leading role at a global level and which have added value in the general public interest such as public sector, health, energy, transport, agriculture and the food chain, cybersecurity and SMEs.

Legal framework

In order to promote a regulatory environment conducive to the development of AI, Members asked the Commission to regularly re-evaluate existing legislation in order to ensure that it is fit for purpose with respect to AI while also respecting EU fundamental values. Parliament noted, at the same time, that AI is a notion encompassing a wide range of products and applications, from automation, algorithms and narrow artificial intelligence to general artificial intelligence. Accordingly, a comprehensive law or regulation on AI should be approached with caution, as sectoral regulation may provide policies that are general enough but also refined up to the level where they are meaningful for the industrial sector.

Ethical aspects

Parliament called for the creation of an ethical charter of best practice for AI and robotics that companies and experts should follow. It called on the Commission to:

- ensure that applications based on AI should not use data collected from various sources without first receiving the consent of the data subject;
- create a framework that makes sure that consent given by the data subject will generate data only for the intended purposes;
- respect the right of citizens to an offline life and to ensure that there is no discrimination against citizens on whom no data has been recorded.

The resolution stressed that ethical rules must be in place to ensure human-centric AI development, the accountability and transparency of algorithmic decision-making systems, clear liability rules and fairness.

Governance

Members called on the Commission and the Member States to consider the creation of a European regulatory agency for AI and algorithmic decision-making tasked, inter alia, with: (i) establishing a risk assessment matrix for classifying algorithm types and application domains according to their potential for a significant negative impact on citizens; (ii) investigating the use of algorithmic systems where a case of infringement of human rights is suspected (with evidence provided by a whistle-blower, for example); (iii) enhancing the effectiveness of the tort liability mechanism; (iv) auditing the AIAs of high-level impact systems to approve or reject the proposed uses of algorithmic decision-making in highly sensitive and/or safety-critical application domains (private health-care, for instance).

Lastly, Parliament stressed the different models being developed in third countries, specifically in the US, China, Russia and Israel, and highlighted the values-based approach used in Europe and the need to work with international partners in bilateral and multilateral settings, for the ethical advancement and adoption of AI.